

**2N5114JAN/JANTX/JANTXV**  
**2N5115JAN/JANTX/JANTXV**  
**2N5116JAN/JANTX/JANTXV**

### Product Summary

Part Number	V <sub>GS(off)</sub> (V)	r <sub>DS(on)</sub> Max (Ω)	I <sub>D(off)</sub> Typ (pA)	t <sub>ON</sub> Max (ns)
2N5114	5 to 10	75	-10	16
2N5115	3 to 6	100	-10	30
2N5116	1 to 4	150	-10	42

### Features

- Low On-Resistance: 2N5114 <75 Ω
- Fast Switching—t<sub>ON</sub>: 16 ns
- High Off-Isolation—I<sub>D(off)</sub>: -10 pA
- Low Capacitance: 6 pF
- Low Insertion Loss

### Benefits

- Low Error Voltage
- High-Speed Analog Circuit Performance
- Negligible “Off-Error,” Excellent Accuracy
- Good Frequency Response
- Eliminates Additional Buffering

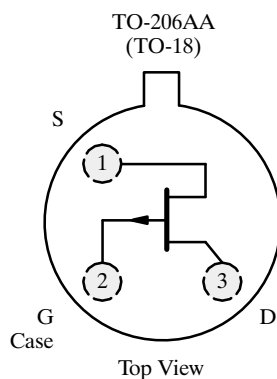
### Applications

- Analog Switches
- Choppers
- Sample-and-Hold
- Normally “On” Switches
- Current Limiters

### Description

The 2N5114JAN/JANTX/JANTXV series consists of p-channel JFET analog switches designed to provide low on-resistance, good off-isolation, and fast switching.

These JFETs are optimized for use in complementary switching applications with the Siliconix 2N4856A series.



### Absolute Maximum Ratings

Gate-Drain Voltage	30 V
Gate-Source Voltage	30 V
Gate Current	-50 mA
Storage Temperature	-65 to 200°C
Operating Junction Temperature	-55 to 200°C

Lead Temperature ( <sup>1</sup> / <sub>16</sub> " from case for 10 sec.)	300°C
Power Dissipation <sup>a</sup>	500 mW

Notes  
a. Derate 3 mW/°C above 25°C

# 2N5114JAN/JANTX/JANTXV Series

# TEMIC

Siliconix

## Specifications<sup>a</sup>

Parameter	Symbol	Test Conditions	Typ <sup>b</sup>	Limits						Unit		
				2N5114		2N5115		2N5116				
				Min	Max	Min	Max	Min	Max			
<b>Static</b>												
Gate-Source Breakdown Voltage	$V_{(BR)GSS}$	$I_G = 1 \mu A, V_{DS} = 0 V$	45	30		30		30		V		
Gate-Source Cutoff Voltage	$V_{GS(off)}$	$V_{DS} = -15 V, I_D = -1 nA$		5	10	3	6	1	4			
Saturation Drain Current <sup>c</sup>	$I_{DSS}$	$V_{GS} = 0 V$	$V_{DS} = -18 V$		-30	-90					mA	
			$V_{DS} = -15 V$				-15	-60	-5	-25		
Gate Reverse Current	$I_{GSS}$	$V_{GS} = 20 V, V_{DS} = 0 V$	$T_A = 150^\circ C$		5		500		500	500	pA	
					0.01		1		1		1	$\mu A$
Gate Operating Current <sup>d</sup>	$I_G$	$V_{DG} = -15 V, I_D = -1 mA$	-5									
Drain Cutoff Current	$I_{D(off)}$	$V_{DS} = -15 V$	$V_{GS} = 12 V$	-10		-500					pA	
			$V_{GS} = 7 V$	-10				-500				
			$V_{GS} = 5 V$	-10						-500		
		$V_{DS} = -15 V$ $T_A = 150^\circ C$	$V_{GS} = 12 V$	-0.02		-1						$\mu A$
			$V_{GS} = 7 V$	-0.02				-1				
			$V_{GS} = 5 V$	-0.02						-1		
Drain-Source On-Voltage	$V_{DS(on)}$	$V_{GS} = 0 V$	$I_D = -15 mA$	-1.0		-1.3					V	
			$I_D = -7 mA$	-0.7				-0.8				
			$I_D = -3 mA$	-0.5						-0.6		
Drain-Source On-Resistance	$r_{DS(on)}$	$V_{GS} = 0 V, I_D = -1 mA$			75		100		150	$\Omega$		
Gate-Source Forward Voltage	$V_{GS(F)}$	$I_G = -1 mA, V_{DS} = 0 V$	-0.7		-1		-1		-1	V		
<b>Dynamic</b>												
Drain-Source On-Resistance	$r_{ds(on)}$	$V_{GS} = 0 V, I_D = 0 mA, f = 1 kHz$			75		100		175	$\Omega$		
Common-Source Input Capacitance	$C_{iss}$	$V_{DS} = -15 V, V_{GS} = 0 V$ $f = 1 MHz$	20		25		25		27	pF		
Common-Source Reverse Transfer Capacitance	$C_{rss}$	$V_{DS} = 0 V$ $f = 1 MHz$	$V_{GS} = 12 V$	5		7						
			$V_{GS} = 7 V$	6				7				
Turn-On Time	$t_{d(on)}$	See Switching Circuit			6		10		25	ns		
	$t_r$				10		20		35			
Turn-Off Time	$t_{d(off)}$				6		8		20			
	$t_f$				15		30		60			

### Notes

- $T_A = 25^\circ C$  unless otherwise noted.
- Typical values are for DESIGN AID ONLY, not guaranteed nor subject to production testing.
- Pulse test:  $PW \leq 300 \mu s$  duty cycle  $\leq 3\%$ .
- This parameter not registered with JEDEC.

PSCIA

### Switching Time Test Circuit

	2N5114	2N5115	2N5116
$V_{DD}$	-10 V	-6 V	-6 V
$V_{GG}$	20 V	12 V	8 V
$R_L^*$	430 $\Omega$	910 $\Omega$	2000 $\Omega$
$R_G^*$	100 $\Omega$	220 $\Omega$	390 $\Omega$
$I_{D(on)}$	-15 mA	-7 mA	-3 mA
$V_{GS(H)}$	0 V	0 V	0 V
$V_{GS(L)}$	-11 V	-7 V	-5 V

\*Non-inductive

#### Input Pulse

Rise Time < 1 ns  
 Fall Time < 1 ns  
 Pulse Width 100 ns  
 PRF 1 MHz

#### Sampling Scope

Rise Time 0.4 ns  
 Input Resistance 10 M $\Omega$   
 Input Capacitance 1.5 pF

See Typical Characteristics curves for changes.

